

REMARKS

In response to the Office Action of September 23, 2002, the above-identified application has been amended. Claims 10, 17, 18, 31, 61, 65 80, 92 and 1111 have been cancelled. Claims 1, 3, 4, 5, 6, 7, 11, 15, 16, 26, 27, 32, 46, 52, 62, 63, 66, 68, 69, 70, 71, 89, 91, 93, 96, 108 and 110 have been amended and new claims 112-120 have been added.

A Substitute Specification is provided with the amendment. The Substitute Specification incorporates the amendments to the original specification which were presented in Paper No. 9 and Paper No. 12. Entry of the amendments to the specification is requested since no new matter is presented. Applicant has not included the earlier proposed text at Page 17, line 32 "or superconducting coupled microwave cavities."

The detailed examination of the application and the close scrutiny of all aspects of the application are noted with appreciation. This response will review each and every element with corresponding detail. The help of the Examiner in the identification and numbering of the papers in the application is gratefully acknowledged.

In the Detailed Action portion of the Office Action, paragraphs 1 and 2, applicant responds as follows. Although it is noted that the Requirement for Restriction is deemed proper and is made final, applicant respectfully requests that claims 1, 15, and 16 be given close scrutiny. It is submitted that claim 16 is an allowable generic or linking claim and that if the Examiner agrees then claims 99-102 and 110 should remain in the application and should not be withdrawn from further consideration.

In paragraph 4 of the Office Action applicant notes the agreement that the terms "electromagnetic field" and "target mass energizable elements. . ." is supported by the specification as

originally filed and accordingly these changes have been added to the latest substitute specification.

Referring now to claim 5 and the claim objections, claim 1 has been amended and the comma at the end of claim 1 has been replaced with a period.

In paragraph 7, claims 1-15, 46-53, 55, 57, 61-63, 70-71, 74-78, 80, 96 and 109 have been rejected under 35 U.S.C. §112, first paragraph as containing subject matter which was not described in the specification in such a way to enable one skilled in the art to which it pertains or with which it is most nearly connected to make and/or use the invention. With respect to claims 1 and 15, the Examiner's attention is directed to the following portions of the specification to identify what the nuclear reactions are. Reference is directed first to page 1, lines 29-35 and page 2, lines 1-2. The Examiner's understanding is correct. The nuclear reaction is a reaction which occurs when some of the nuclei are triggered by impacting particles to produce a nuclear reaction. The nuclear reaction is the ejection of a nuclear particle from a nucleus due to the nuclear reaction. It is like an exhaust propellant from a sub-microscopic rocket or in the case of electrons, shaken in a resonance cavity, superconductor or, plasma beam etc. and there is a third time derivative of the motion of the nucleus or electron mass, or a jerk, which produces a gravitational wave whose power can be estimated, for example, by quadruple approximation.

The Examiner has questioned what is involved in the interrogation and how the sequence is related to the expected gravitational wave frequency. Question is also raised as to how the wave phase is determined and locked on by the computer. In the Office Action reference is made to page 16, lines 8-12 of the specification but it is indicated that the "interrogation process" as described is general but not specific enough for one of ordinary skill to make and use applicant's invention.

The Examiner's attention is directed to Page 14, lines 23-35, Page 15 and Page 16 lines 1-12 of the specification. As indicated therein, the collector elements are described and as indicated could be a number of different possible elements. The IIPCS activates or energizes the energizable elements in a sequence as the ring of gravity waves whose propagation plane is normal to the direction of the energizable elements quadruple radiator access moves outward radially out at location GW speed. As indicated in the last sentence of the paragraph, the collector elements would be located at the same locations as the energizable elements and interrogated in a sequence by the IIPCS to detect or receive specific GW frequencies, that is tuned to the GW frequency.

The interrogation is similar to that of the microscopic and larger collector elements discussed in the '597 patent, at Col. 14, lines 47-67 and Col. 15, lines 1-11, namely, "The passage of a gravitational wave deforms an objection or set of objects as it passes through them. For example, a piezoelectric polymer, a silicon semiconductor, a thin film piezoelectric resonator, a piezoelectric-crystal functioning as a collection element is deformed by a GW and produces a small electric current. Likewise, the plates of a capacitor functioning as a collection element are slightly moved relative to each other and thereby produce a signal . . ." Just as in the case of microscopic and larger collector elements, the signals from the submicroscopic collection elements manifests themselves as electrons, which are collected by a computer controlled logic scanning or interrogation system (e.g., the IIPCS) as described in the '597 patent. In this case the scanning may be in the form of an electron beam similar to a conventional cathode-ray tube, a submicroscopic IIPCS circuit composed of submicroscopic conductors (e.g., carbon nanotubes) similar to those in the nanomachines described in the '597 patent. Reference is also directed to FIG. 6A and the description thereof which is a plan view of a typical stack of elements or array

of element sets or subsets which could be GW collectors or could be energizable elements such as target atoms or nuclei. Reference is also directed to FIG. 6B and the description thereof. Attention is directed to the description as follows: "The distance between the lines (or planes comprising the GW wave crest) at the elements in the GW direction 21 is 24. The elements 26 on the anticipated GW crest 25 of the GW 21 are connected to an information processing device, that is interrogated (detection mode) or energized (generation mode). In FIG. 6C the future locations of the GW crest 60 is in front of the GW crest 25 and the directivity angle is 135°, in FIG. 6D it is 90°, in FIG. 6E it is 45°, and in FIG. 6F it is 0°." Note that in the detection mode, just as in the case of microscopic and larger collector elements, the signals from the submicroscopic collection elements manifest themselves as electrons which are collected by a computer-controlled scanning apparatus (e.g., the IIPCS) as described in the '597 patent.

The Examiner has indicated that it is not clear from the description how one of ordinary skill would impart information to the gravity waves nor is it clear how the demodulator would extract information from the gravity waves. Again attention is directed to the parent application 6,160,336. As stated therein, "As a further example of modulation of (the) flywheel's rotational rate (and, hence, the GW) by the IIPCS, consider a signal imparted to or impressed by the fly wheel spinup or spindown rate in the form of the digital or binary message 1001101. Let us utilize a clock rate or cycle rate (the GW frequency) for the message of one MHz. The procedure will be to introduce a 1 by ceasing all coil force on the fly wheel rim and a 0 by retaining the IIPCS function, uninterrupted (spinup force or jerks) by the direction of the computer program (computer controlled logic system) in either the spinup or spindown mode. Thus, the 1001101 message will be imparted to or expressed by the rotational rate by means of one microsecond interruption of all coil elements,

all power transistors off (no jerks) followed by two microseconds of the usual sequence of power transistor settings (creating jerks)...followed by two microseconds of interruption of all coil currents, all power transistors off (no jerks), followed by one microsecond of the usual sequence of power transistor settings (creating jerks), followed by one microsecond of interruption of all coil currents (no jerks)." See Col. 17, lines 9-26. The demodulation or reception of information from the modulated GW involves the measurement of the frequency and/or amplitude of the received GW as detected by the various means described in the specification. See also Page 14, lines 22-35 to Page 17, lines 1-35.

Claims 1-14, 16-88, 97-98, and 103-111 have been rejected under 35 U.S.C. 35 U.S.C. § 112 2nd paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

It is noted with respect to claim 1 that the recitation "such that particles move in approximately the same direction" is indefinite. As amended claim 1 now provides that a source of sub-microscopic particles is directed at target nuclei and a computer-controlled logic system selectively propels the particles towards the target nuclei to produce a nuclear reaction. The claims further provides a containment system for aligning the products of the nuclear reaction so that the products of the reaction move in the same direction to produce a third time derivative of the motion of the target nuclei and thus produce gravitational waves which move in the same direction as the products of the nuclear reaction. In response to the questions of the Examiner, the word "particles" has been cancelled and "products of a nuclear reaction" have been substituted therefore.

The question about "the same direction" has now been defined and as indicated in the claim, the products now move in the same direction as the particles move toward the target nuclei.

Claim 16 has now been amended to specify that the computer-controlled logic system directs the energizing elements to act so as to produce third time derivative of the motion of the energizable elements and thereby generate gravitational waves. The "actions" of the elements are now specifically defined.

Claim 46 has been rejected on the grounds that "collector elements... interrogated in sequence according to an expected gravitational wave frequency in order to be a true gravitational wave receiver" is vague and indefinite. The question is asked, what is the "interrogation"? What is the structural relationship between the collector elements, the detector and the tuned receiver? As the preceding discussion in this Remarks section has indicated, the interrogation is described on Page 14, lines 27-35, Page 15 and Page 16, lines 1-2 of the specification. In addition, further discussion of the process of interrogation is also found in the '597 patent at column 14, lines 47-67 and Col. 15, lines 1-11. As now amended, claim 46 specifies that the gravitational wave collector elements are interrogated by a computer-controlled logic system according to the expected arrival of the crests of a GW of a predetermined frequency and phase. As described in the specification on the pages noted above, the interrogation is defined, the sequence of signals is defined, and the structural relationship between the collector elements, the detector and the tuned receiver is defined. The collector elements are located at the same locations as the energizable elements and are interrogated in a sequence by the IIPCS to detect or receive specific GW frequencies, that is, they are tuned to the GW frequency.

In paragraph 10 of the Office action, claims 15-88, 96-98, 103-109 and 111 are rejected under 35 U.S.C. 112 because the disclosed invention is inoperative and therefore lacks utility. As now amended claims 15 and 16 recite a computer-controlled logic system for the generation of a third-time derivative or jerk. Claim 16 now specifies that the gravitational wave generating device comprises a plurality

of target energizable elements, a plurality of energizing elements that act on the energizable elements, and a computer-controlled logic system to direct the energizing elements to act so as to produce a third-time derivative of the motion of the energizable elements.

Claims 46 and 96 now recite a computer-controlled logic system for the interrogation of collector elements to receive GW at a particular phase and frequency.

Claim 15 has been rejected under 35 U.S.C. 102(b) as being anticipated by the Kraus article or alternatively, the Weber article.

Claim 15 has now been amended to specify that the invention is a source of products of a nuclear reaction under the control of a computer-controlled logic system to produce a third time derivative of the motion of energizable elements and thereby generate gravitational waves. Neither Kraus nor Weber teach the use of a computer-controlled logic system to generate a third-time derivative of the motion of energizable elements for producing gravitational waves. In view of claim 15 as now amended, it is submitted that this claim is allowable as are all the other claims in the application.

It is noted that claim 17 would be allowable if rewritten to overcome the rejection of 35 U.S.C. 101 and 35 U.S.C. § 112 2nd paragraph set forth in the Office Action and to include all of the limitations of the base and any intervening claims. It is submitted that the claims now in the application include a GW generator or communication device including a computer-controlled logic system, and energizing elements to produce a third-time derivative of the motion of energizable elements.

As taught by the antecedent 6,417,597 Patent of which this application is a continuation in part, the basic physical process for generating a gravitational wave is the third-time derivative of the motion of a mass termed a "jerk" or $\Delta f/\Delta t$, where Δf is an increasing force, f , on a mass carried out over a small time interval, Δt . As noted in the 597' patent the physical process produces a gravitational

wave with the power given by, for example, the quadrupole approximation (as originally derived by Einstein) or it could be determined directly from the special and general relativity equations (using a computer-implemented numerical integration as, for example, discussed in S.F. Ashby, Ean Foster, James M. Latimer, Norman, Manesh Parshar, Paul Saylor, Schultz, Edward Seidel, Wai-Mo Suen, F.D. Swesty, Clifford M. Wild (2000), "A Multipurpose Code for 3-D Relativistic Astrophysics and Gravitational Wave Astronomy: Application to Coalescing Neutron Star Binaries," Final Report for NASA CAN NCCS5-153, October 15, 30 pages). The quadrupole approximation itself is not the physical process, but only one means of establishing the power of the gravitational wave. Thus the present invention relies upon the fundamental physical concept of the jerk and not on the computational means for establishing the power or any other feature of the gravitational wave. As far as a harmonic motion of a mass or a pair of masses, (a harmonic oscillator) is concerned, gravitational waves are generated. Just as in the case of a pendulum, the usual descriptor of harmonic motion, there exists a third time derivative of the pendulum bob. It is the jerk of that bob that produces the gravitational wave, which can be estimated using a quadrupole approximation or computed exactly by means of a solution of the equations of special and general relativity. The present invention practices the generation of a gravitational wave utilizing the equations described in the prior '597 patent and introduces the word "quadrupole" as one of a number of means of determining the power of the gravitational wave.

In view of the foregoing it is submitted that all the claims now in the application are allowable and an indication to that effect is solicited.

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Attached hereto is a marked-up version of the changes made to the above-identified application by the current amendment. The attached page is captioned "Version with markings to show changes made."

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. (Amended) A gravitational wave generating device comprising:
a plurality of target nuclei [aligned] in a constrained state,

a source of submicroscopic particles directed at the target nuclei,

a computer-controlled logic system operatively connected to the particle source for selectively propelling the particles toward the target nuclei to [produce] cause products of a nuclear reaction to be emitted from the nuclei, and

a containment system for aligning the products of the nuclear reaction such that the [particles] products move in approximately the same direction, produce a third time derivative of the [jerk or oscillation in the] motion of the target nuclei reacting to the emitted products of the nuclear reaction and thereby generate gravitational waves in that direction [,].

3. (Amended) A device according to claim 1 in which the plurality of target nuclei comprises a [gas] fluid.

4. (Amended) A device according to claim 3 wherein the [gas] fluid includes electrons [gas].

5. (Amended) A device according to claim 1 in which the plurality of target nuclei comprises a [fluid] gas.

6. (Amended) A device according to claim [5] 3 in which the fluid is a superconducting fluid.

7. (Amended) A device according to claim 1 in which the plurality of target nuclei are [contained] constrained in an electromagnetic field.

11. (Amended) A device according to claim [10] 7 in which the electromagnetic field comprises intermolecular forces.

15. (Amended) A device for generating gravitational waves [utilizing] comprising a source of products of nuclear reactions under the control of a computer-controlled logic system to produce a third time derivative of the motion of [submicroscopic particles] energizable elements and thereby generate gravitational waves.

16. (Amended) A gravitational wave generating device comprising:

a plurality of target energizable elements,
a plurality of energizing elements that act on the energizable elements [and generate gravitational waves], and

a computer controlled logic system operatively connected to the energizing elements to control the action of the energizing elements so as to produce a third time derivative of the motion of the energizable elements or a jerk and thereby generate gravitational waves.

26. (Amended) A device according to claim 23 in which the beam particles collide with the energizable elements and produce a [jerk or oscillation] third time derivative of the motion of the energizable elements and generate gravitational waves.

27. (Amended) A device according to claim 26 in which the beam particles collide with the energizable elements to produce a nuclear reaction that causes the ejection of nuclear reaction products that result in a third time derivative of the motion of the energizable elements.

32. (Amended) A device according to claim 16 in which the energizing elements move in [step] sequence to define a gravitational-

wave front and energize the energizable elements in sequential order to generate and accumulate gravitational-wave energy as the gravitational-wave front progresses.

46. (Amended) A gravitational wave detection device [in which] comprising gravitational-wave collector elements that are interrogated by a computer-controlled logic system according to an expected arrival time of the crests of a gravitational wave of a predetermined gravitational wave frequency and phase in order to be a tuned gravitational wave receiver.

52. (Amended) A device according to claim 46 in which signals from the collector [element's] elements [signal] can be measured by a superconducting quantum interference device (SQUID).

62. (Amended) A device according to claim [61] 46 in which the collector elements [sets or subsets] are disposed in a spherical array.

63. (Amended) A device according to claim 62 in which the spherical array of collector element [sets or subsets] comprises a plurality of piezoelectric crystals spread evenly over the surface of a sphere.

66. (Amended) A device according to claim [65] 16 in which the energizable elements [sets or subsets] are disposed in a spherical array.

68. (Amended) A device according to claim 66 in which the energizable element [sets or subsets] comprise a spherical piezoelectric crystal or crystals.

69. (Amended) A device according to claim 68 in which actuating electrodes are spread evenly over the surface of the piezoelectric

crystals and operatively connected to a power source controlled by a computer-controlled logic system.

70. (Amended) A device according to claim 62 in which the collector element [sets or subsets] comprise spherical piezoelectric crystals.

71. (Amended) A device according to claim 70 in which actuating electrodes are spread evenly over the surface of the piezoelectric crystals and operatively connected to a computer-controlled logic system.

89. (Amended) A gravitational wave communications device comprising:

a plurality of target nuclei aligned in a constrained state,

a source of submicroscopic particles directed at the target nuclei,

a computer-controlled logic system operatively connected to the particle source for selectively propelling the particles toward the target nuclei to produce a nuclear reaction,

a containment system for aligning the products of the nuclear reaction such that the particles move in approximately the same direction, produce a [jerk or oscillation] third time derivative in the motion of the target nuclei and thereby generate gravitational waves, and

a transmitter operatively connected to the containment system for selecting the number of particles propelled at any given time to [for modulating] modulate the gravitational waves.

91. (Amended) A device according to claim 90 in which the modulator imparts information to the gravitational waves by selecting their frequency and amplitude.

93. (Amended) A device according to claim [92] 91 including a detector at a remote location for receiving the modulated gravitational waves.

96. (Amended) A gravitational wave communications device comprising:

a gravitational wave generator for producing [gravity] gravitational waves having a particular frequency and amplitude as determined by the frequency and amplitude of the jerks of the masses comprising the gravitational wave generator,

a modulator connected to the generator for imparting information to the [gravity] gravitational waves by modifying their frequency and amplitude,

a computer-controlled logic system for controlling the frequency and amplitude of the jerks,

a detector for receiving the modulated [gravity] gravitational waves having a particular frequency and amplitude, and

a demodulator controlled by a computer-control logic system for extracting the information from the frequency and amplitude of gravitational waves and delivering it to a presentation device.

108. (Amended) A device according to claim 16 in which the energizable elements are maintained in a state of superconductivity.

110. (Amended) A gravitational wave propulsion system comprising:

a gravitational wave generator for producing gravitational waves that are a source of an additional gravitational field,

a housing for the gravitational wave generator for channeling and directing the gravitational waves in a direction that will create a change in gravity to urge [a] an [massive] object in a preferred direction, and

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refractive control elements for altering the direction of the gravitational waves.

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